Quiz Results

File: DAA UNIT 2

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Score: 2/10

Question 1: Which algorithm design technique is described as dividing a problem into subproblems?
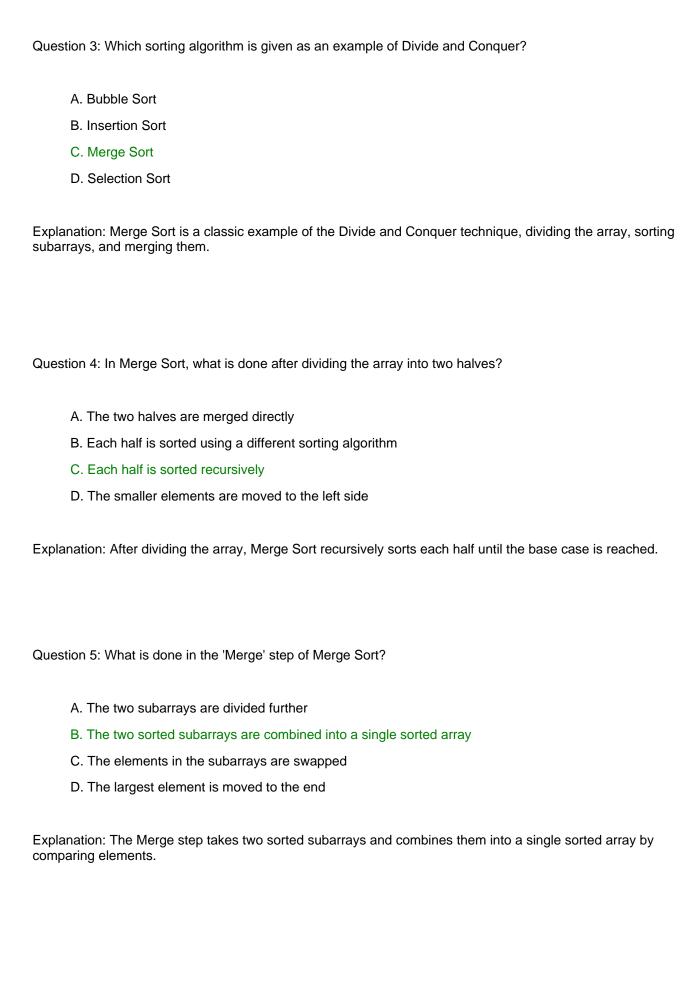
    A. Dynamic Programming

    B. Greedy Algorithm

    C. Divide and Conquer

    D. Backtracking

Explanation: Divide and Conquer is a technique that involves dividing a problem into smaller subproblems, solving them, and then combining the solutions.

Question 2: What is the first step in the general plan for Divide and Conquer?

    A. Solve the subproblems using a different algorithm

    B. Combine the solutions to the subproblems

    C. Divide a problem into subproblems of the same type and ideally of equal size

    D. Employ a greedy algorithm

Explanation: The first step in Divide and Conquer is to break down the original problem into smaller, similar subproblems.

Question 3: Which sorting algorithm is given as an example of Divide and Conquer?

A. Bubble Sort

B. Insertion Sort

C. Merge Sort

D. Selection Sort

Explanation: Merge Sort is a classic example of the Divide and Conquer technique, dividing the array, sorting subarrays, and merging them.

Question 4: In Merge Sort, what is done after dividing the array into two halves?

A. The two halves are merged directly

B. Each half is sorted using a different sorting algorithm

C. Each half is sorted recursively

D. The smaller elements are moved to the left side

Explanation: After dividing the array, Merge Sort recursively sorts each half until the base case is reached.

Question 5: What is done in the 'Merge' step of Merge Sort?

A. The two subarrays are divided further

B. The two sorted subarrays are combined into a single sorted array

C. The elements in the subarrays are swapped

D. The largest element is moved to the end

Explanation: The Merge step takes two sorted subarrays and combines them into a single sorted array by comparing elements.

Question 6: In the worst-case scenario, how many key comparisons, Cmerge(n), are performed during the merging stage of Merge Sort?

    A. n/2

    B. n

    C. n - 1

    D. log n

Explanation: In the worst case for merging, Cmerge(n) = n - 1 comparisons are made. This happens when the elements are interleaved between the two arrays.

Question 7: What is the time complexity of Merge Sort?

    A. O(n)

    B. O(n^2)

    C. O(log n)

    D. O(n log n)

Explanation: The time complexity of Merge Sort is O(n log n), making it an efficient sorting algorithm.

Question 8: Quick Sort works based on what technique?

    A. Dynamic Programming

    B. Greedy Algorithm

    C. Divide and Conquer

    D. Brute Force

Explanation: Quick Sort uses the Divide and Conquer technique to sort an array by partitioning it around a pivot.

Question 9: In Quick Sort, what is the role of the 'Partition' function?

    A. To sort the entire array

    B. To select the largest element

    C. To create a partition around the correct position of a pivot

    D. To merge two subarrays

Explanation: The Partition function in Quick Sort places the pivot element in its correct sorted position and divides the array into two subarrays.

Question 10: What is selected first when implementing the Quick Sort algorithm?

    A. Middle Element

    B. Smallest element

    C. Pivot point

    D. Largest element

Explanation: Quick Sort works by selecting a pivot point and partitioning the array around it, such that elements smaller than the pivot are placed before it and elements greater than the pivot are placed after it.